

FIG. 1

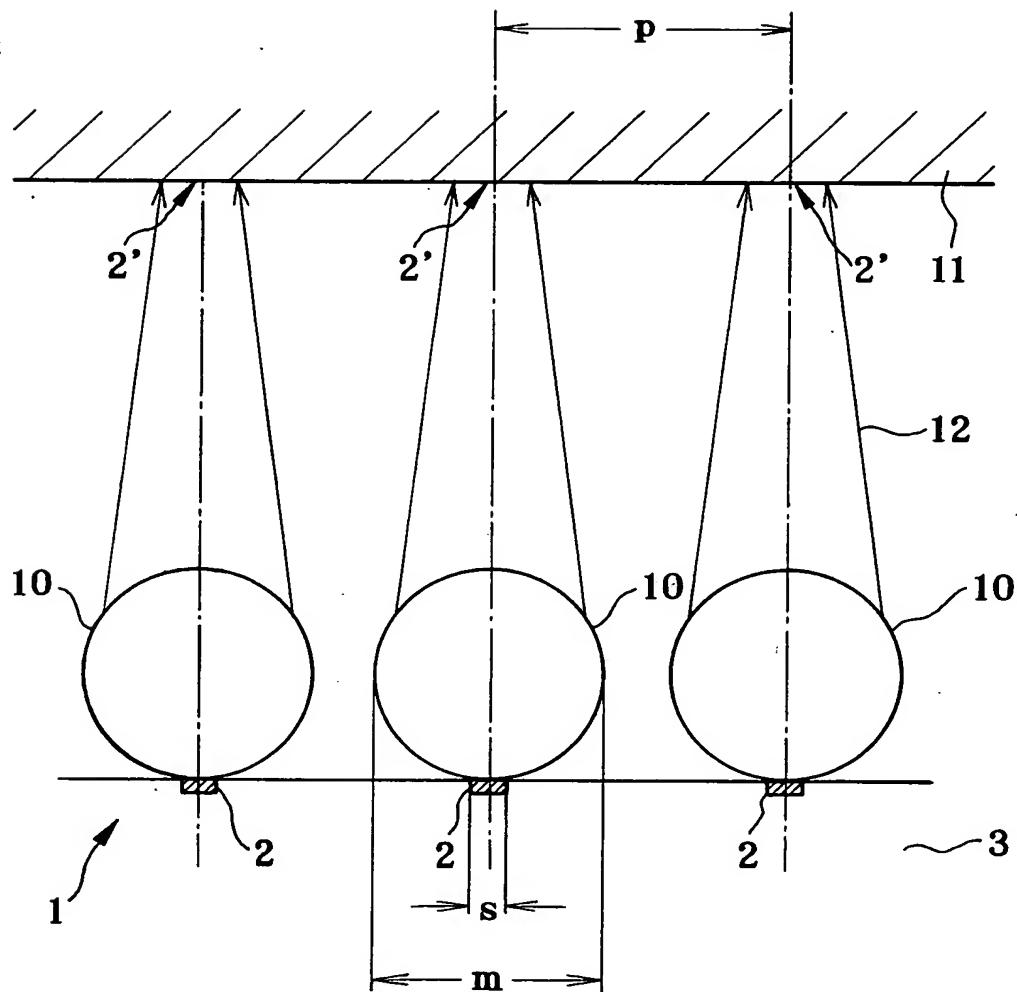


FIG. 2(a)

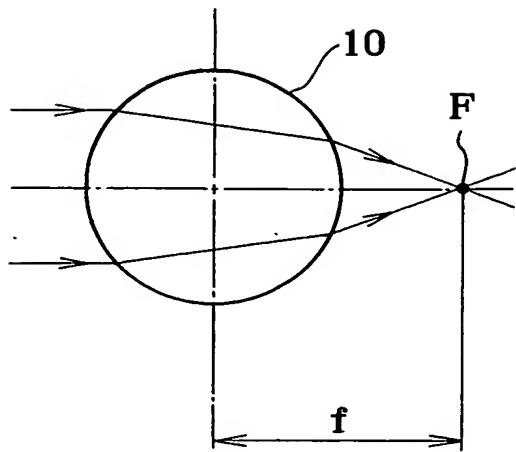


FIG. 2(b)

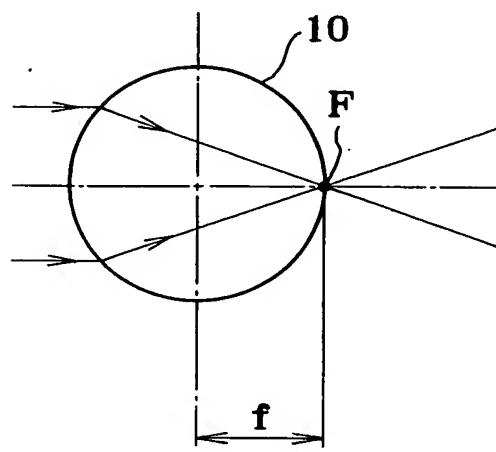


FIG. 3

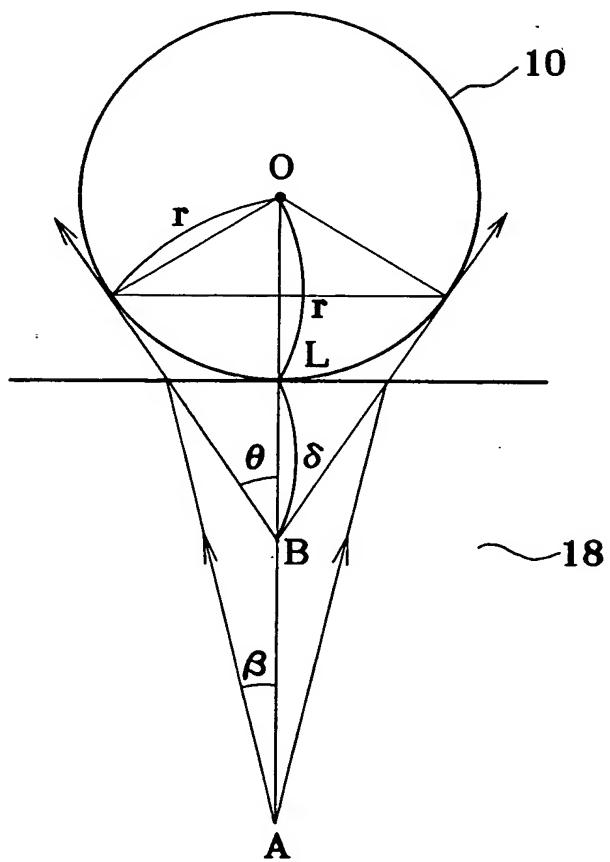


FIG. 4

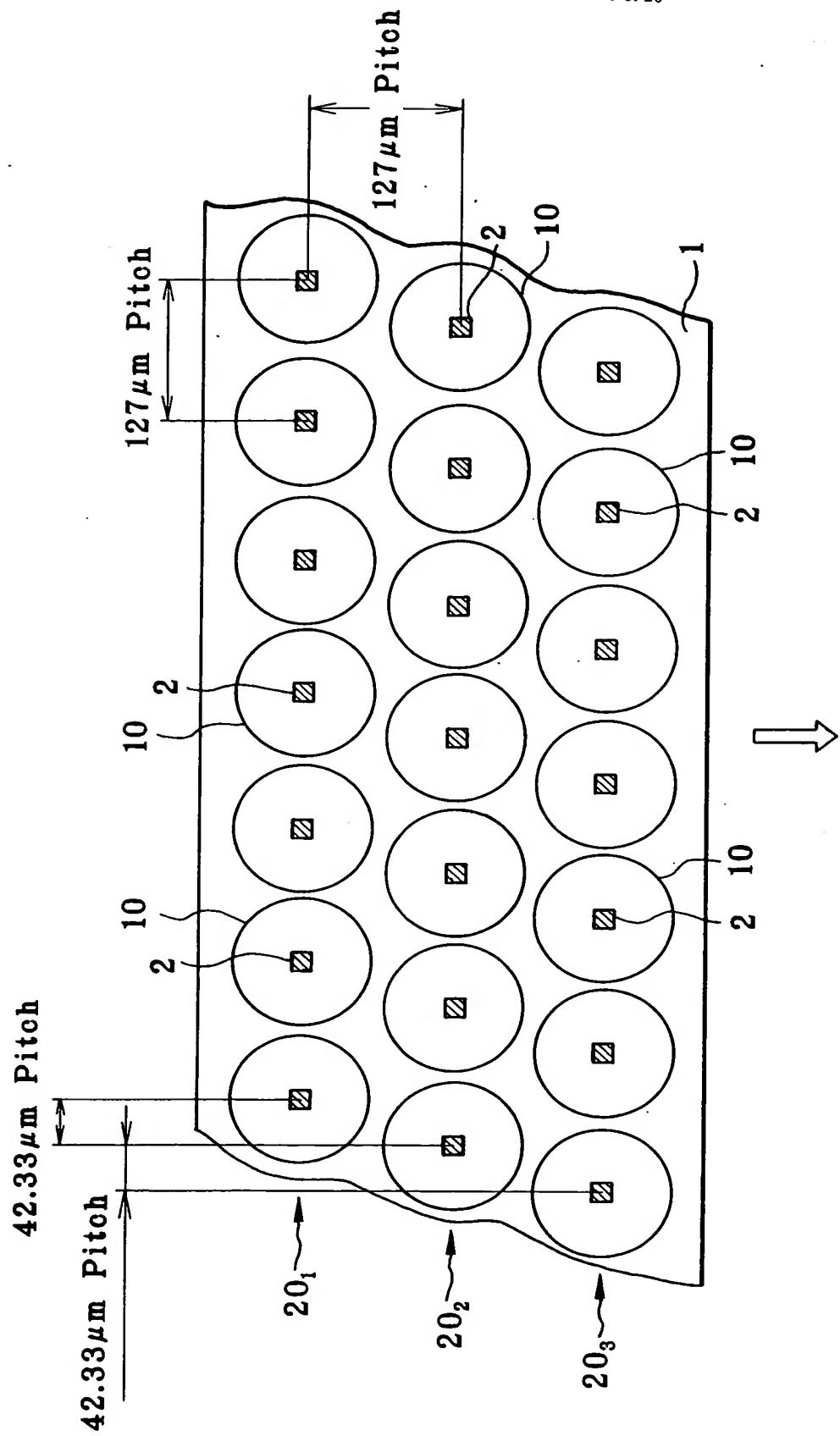


FIG. 5

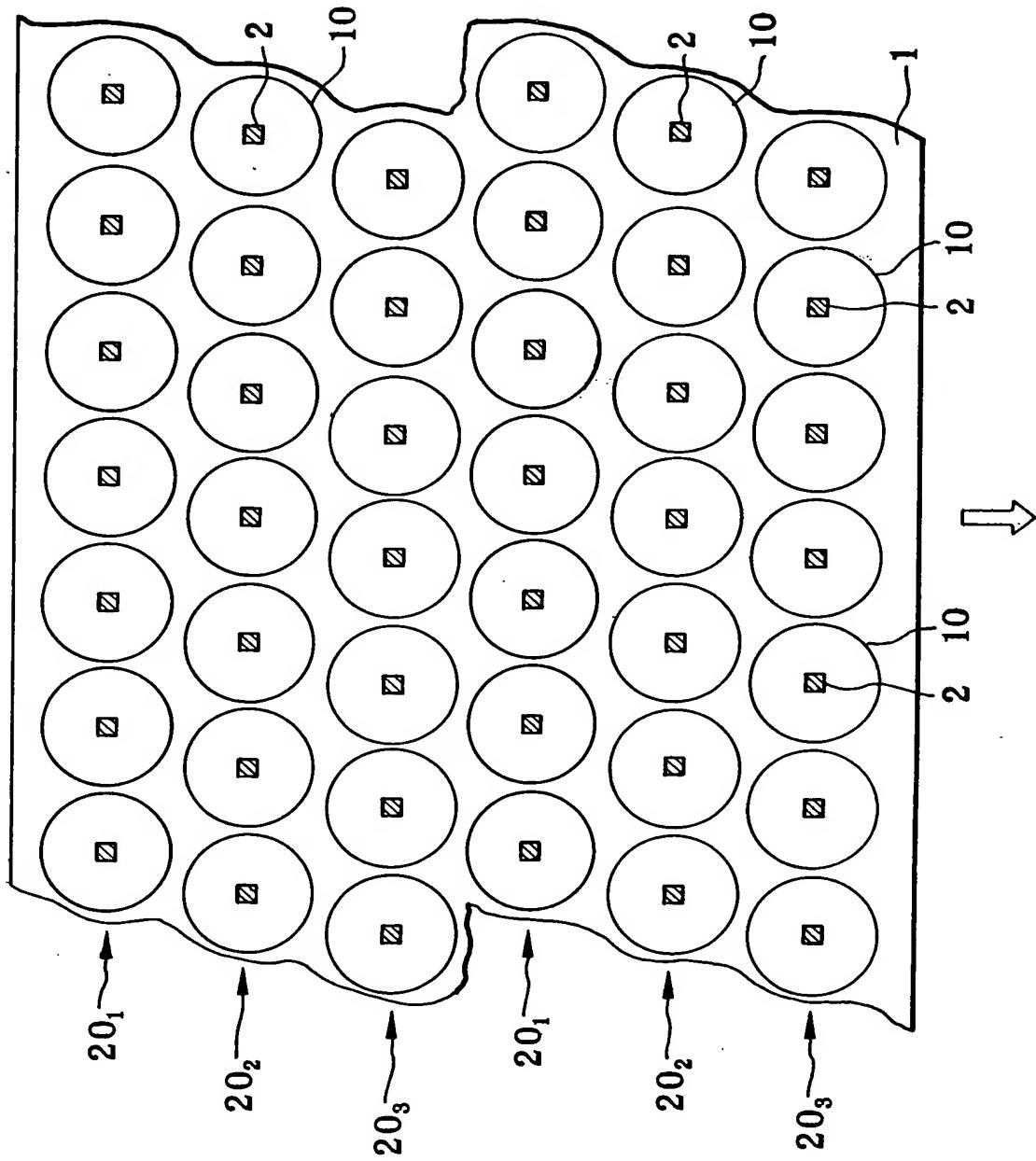


FIG. 6

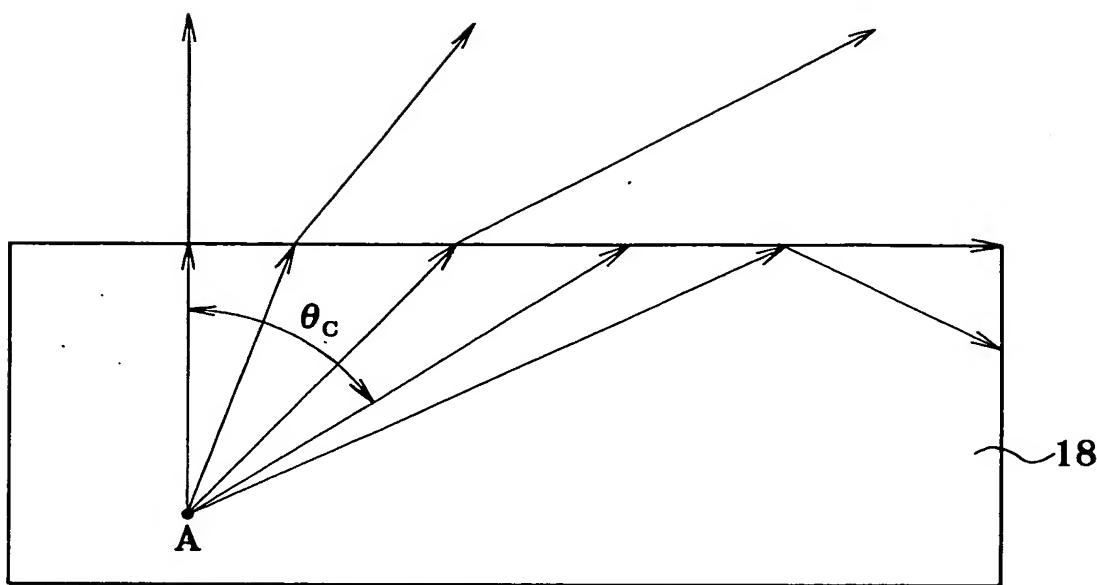


FIG. 7

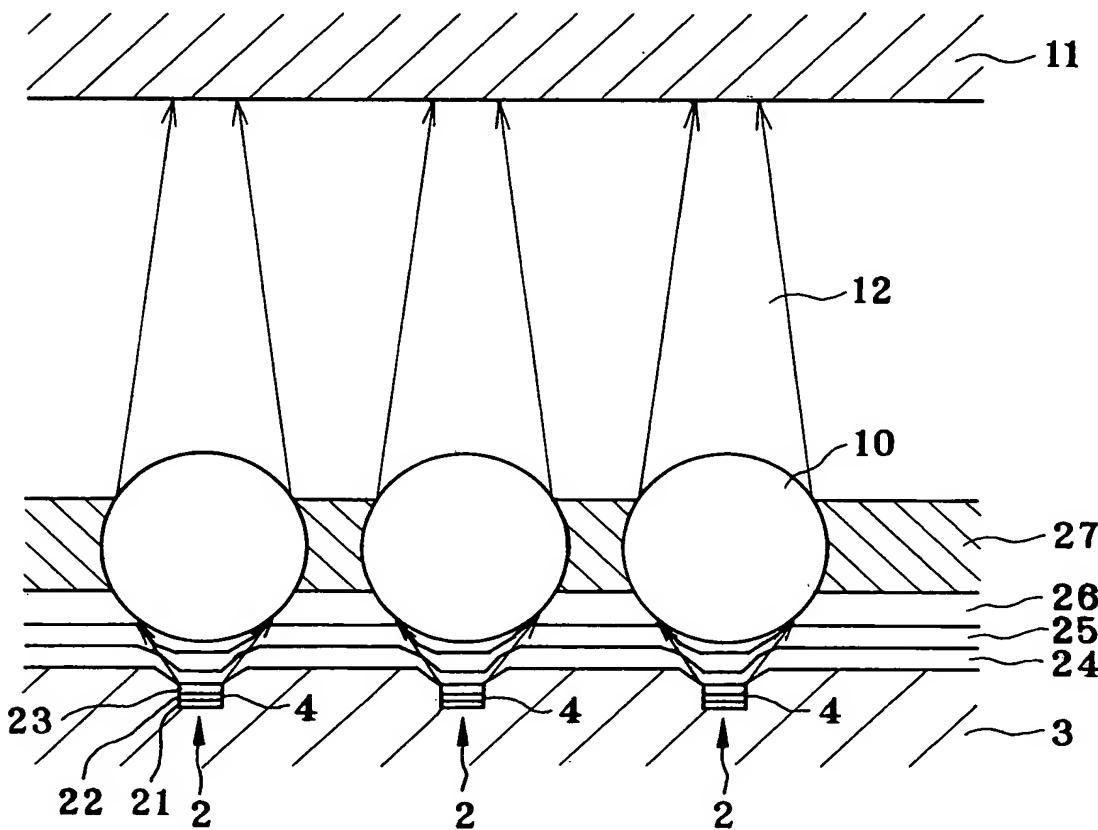


FIG. 8

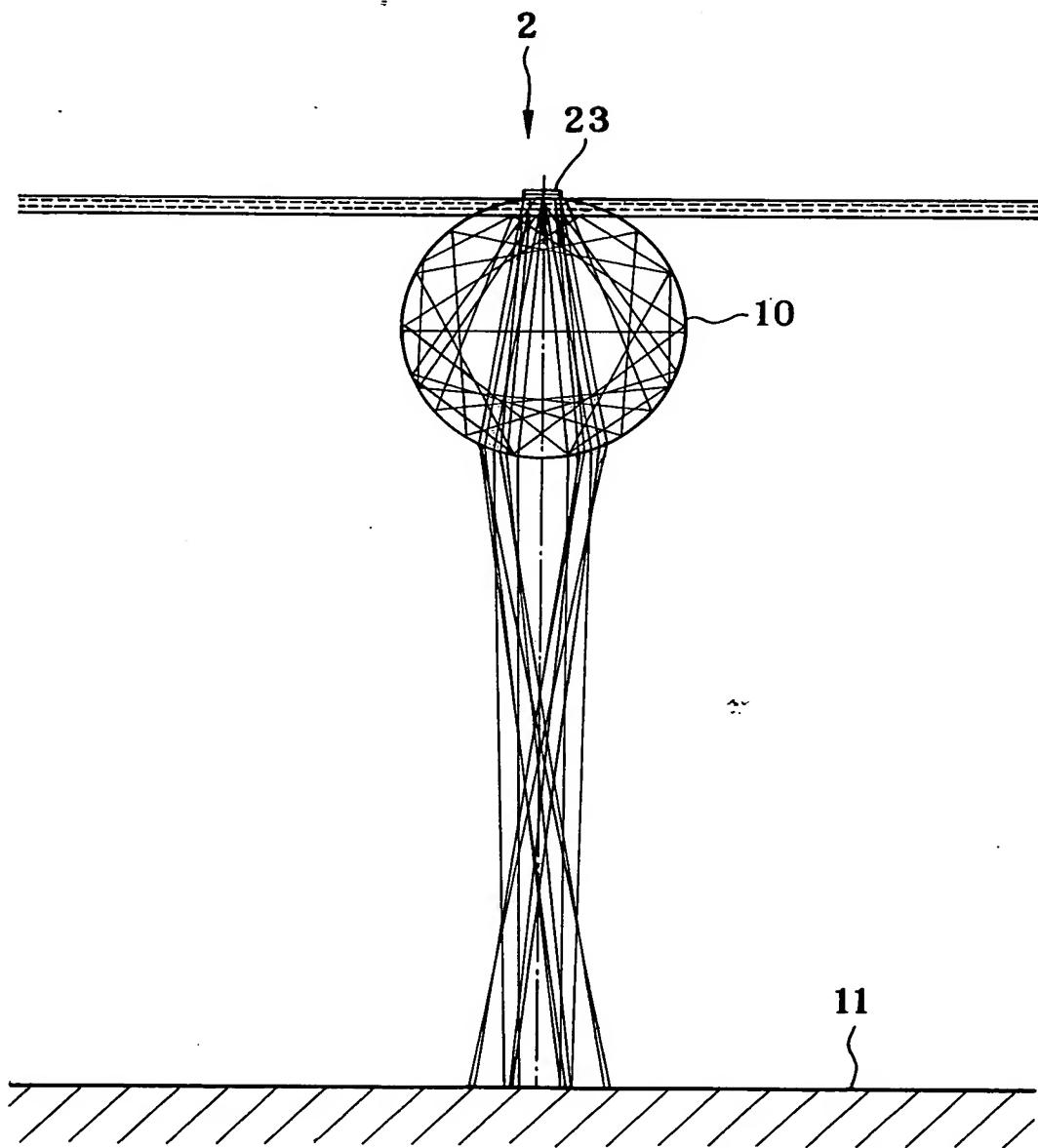


FIG. 9

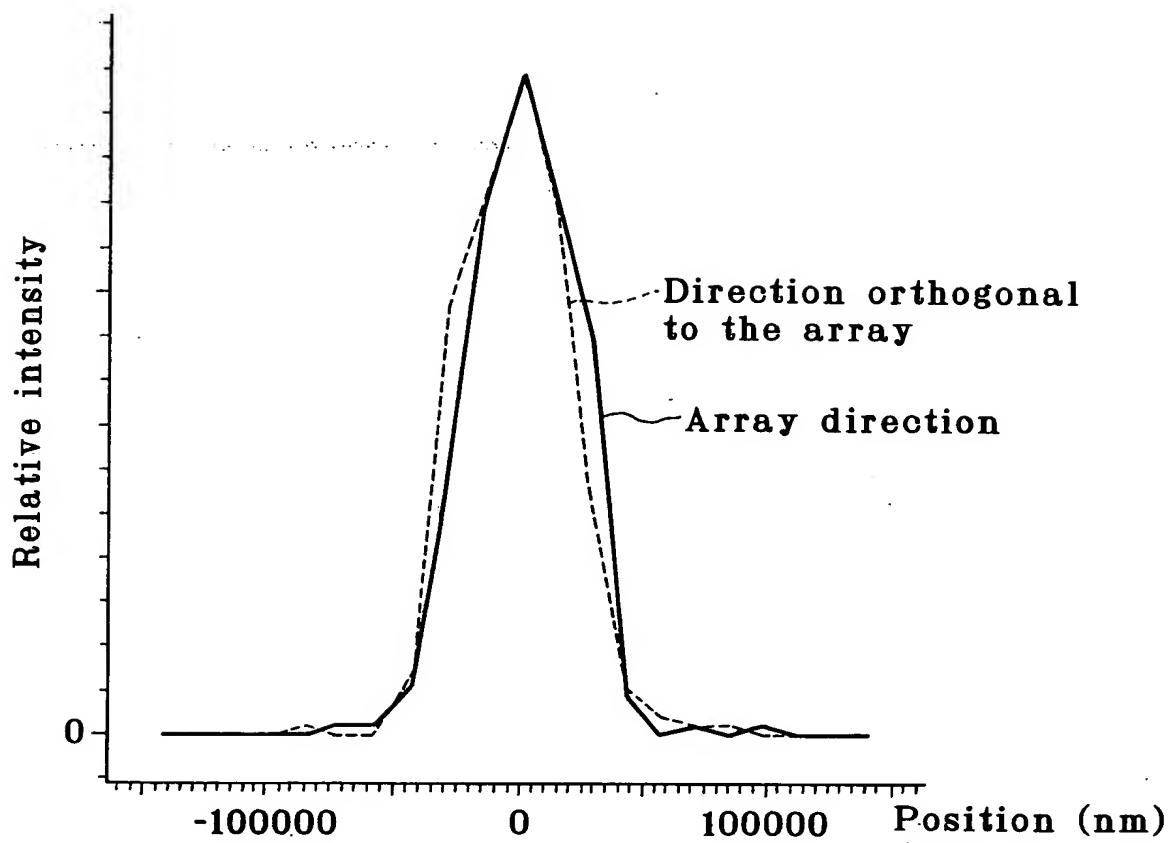


FIG. 10

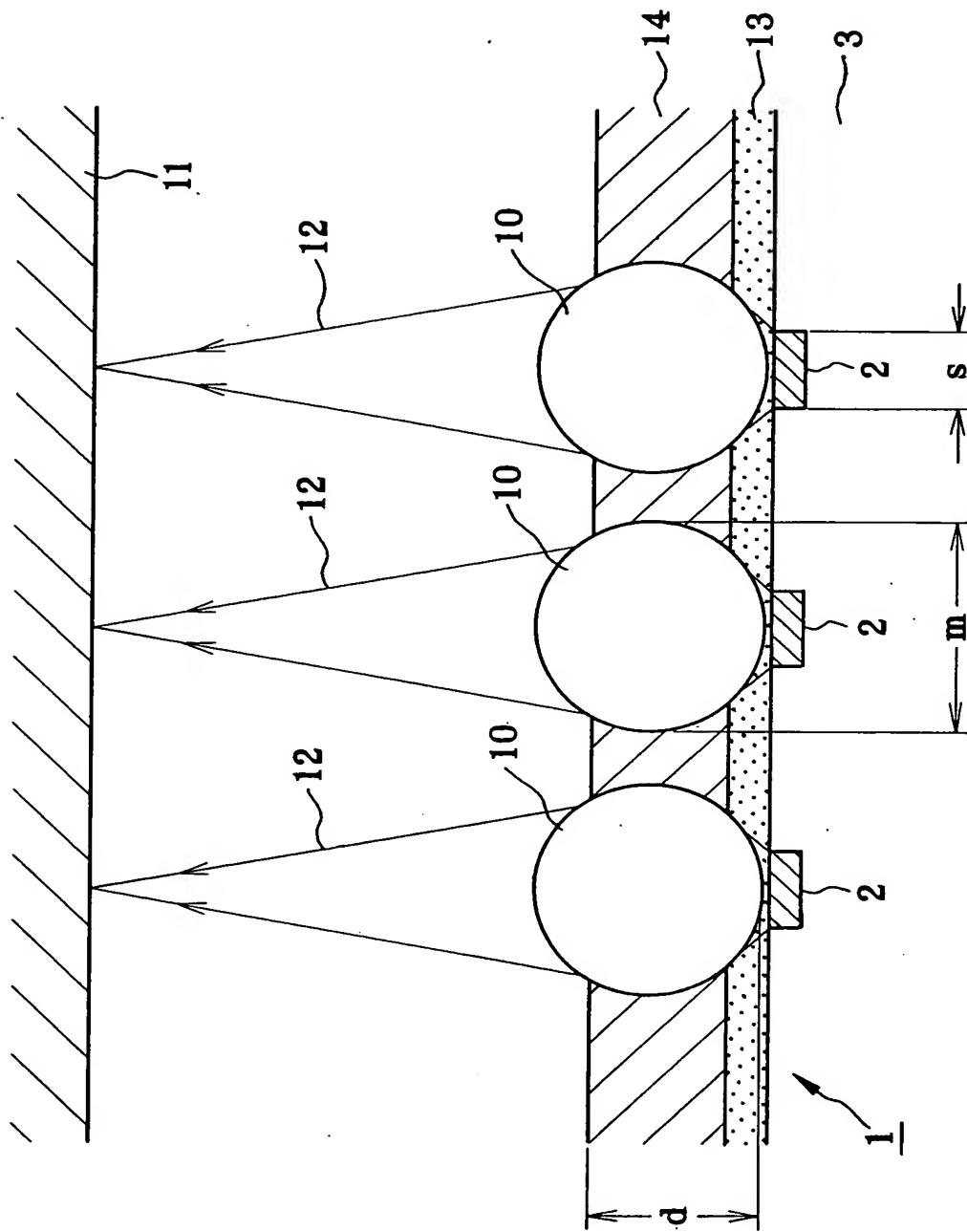
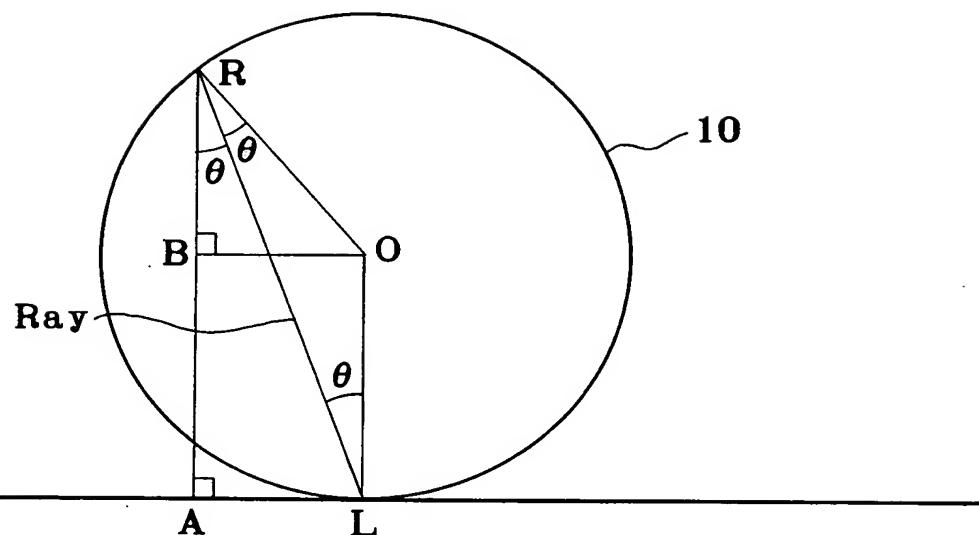


FIG. 11



θ : Angle of propagation

L : Point of incidence
(the lowermost point)

O : Center of the ball lens

FIG. 12

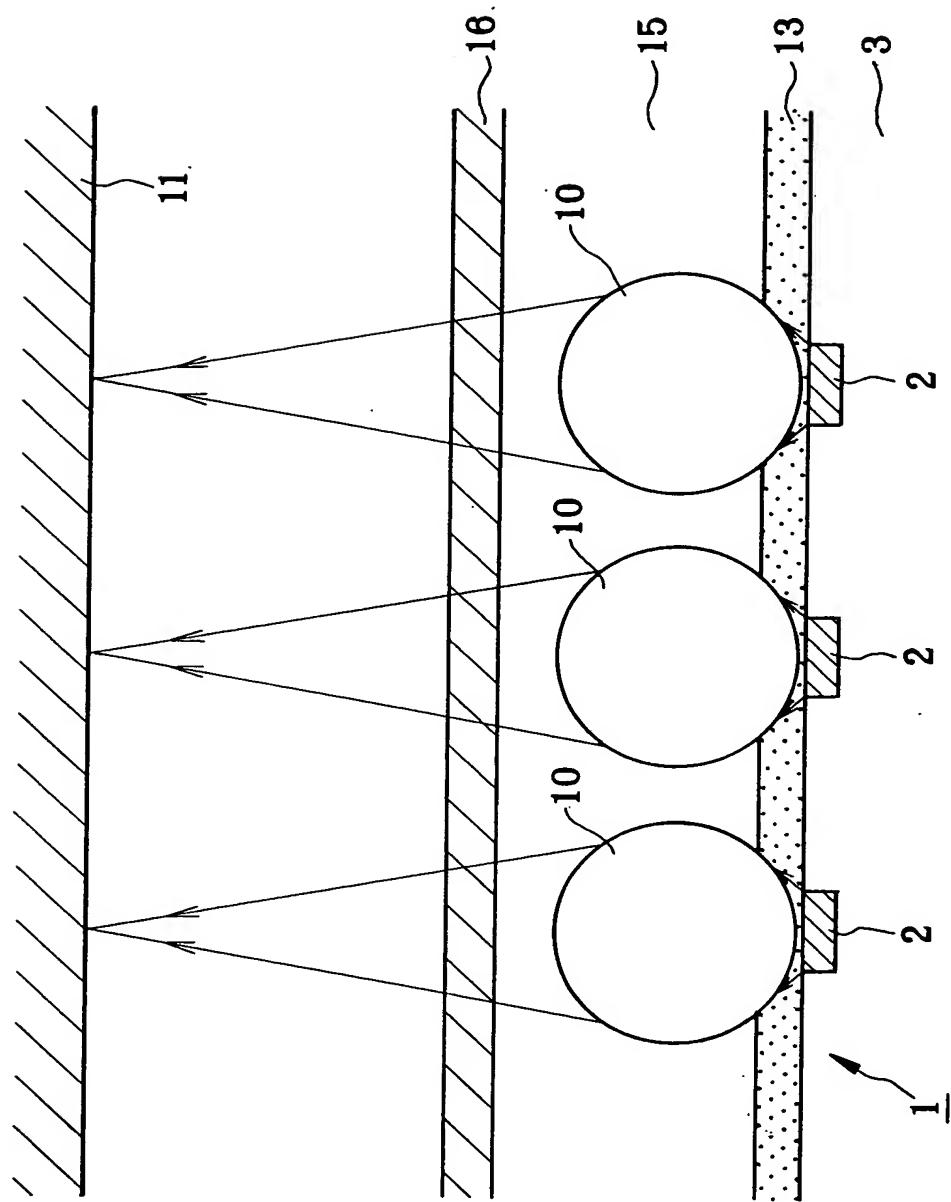


FIG. 13

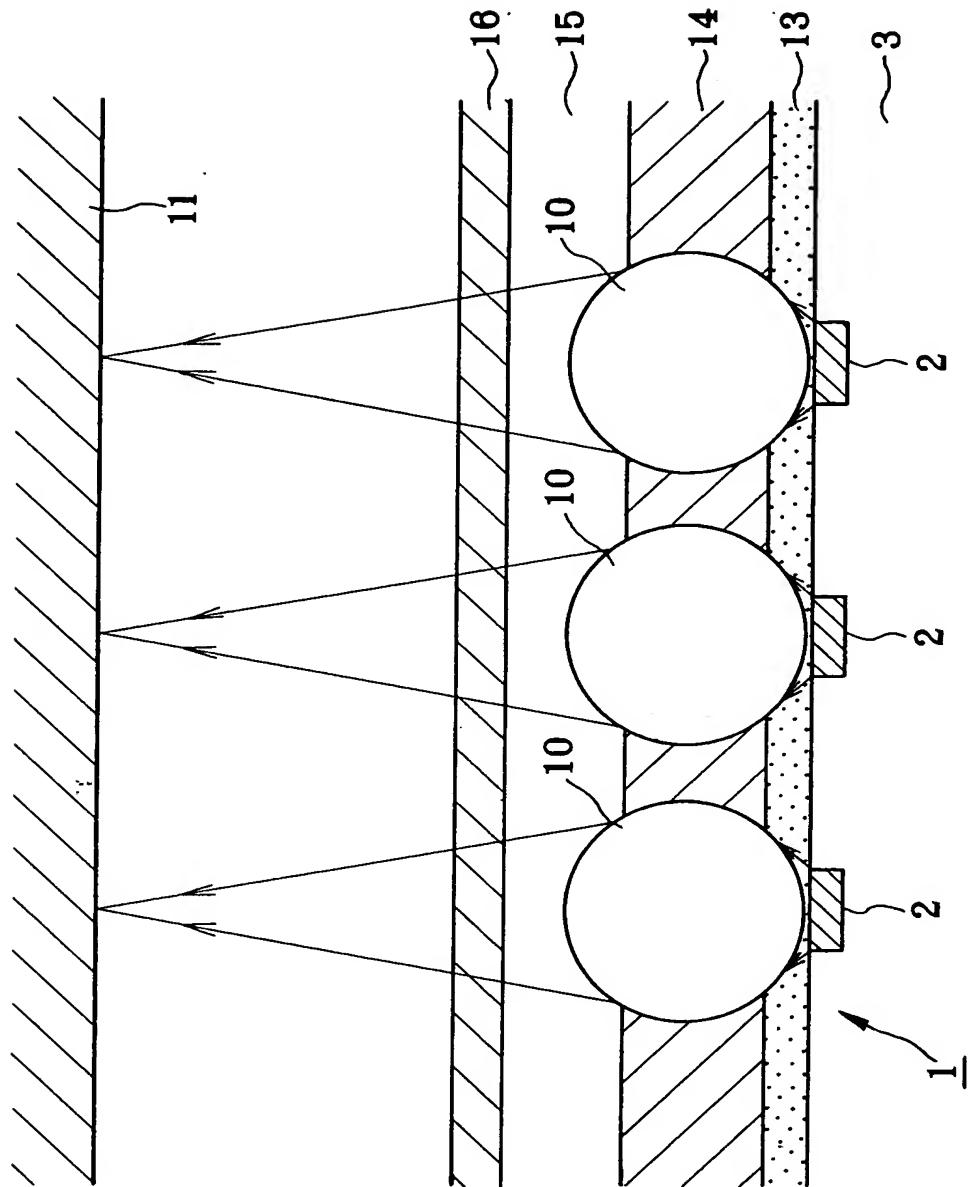


FIG. 14

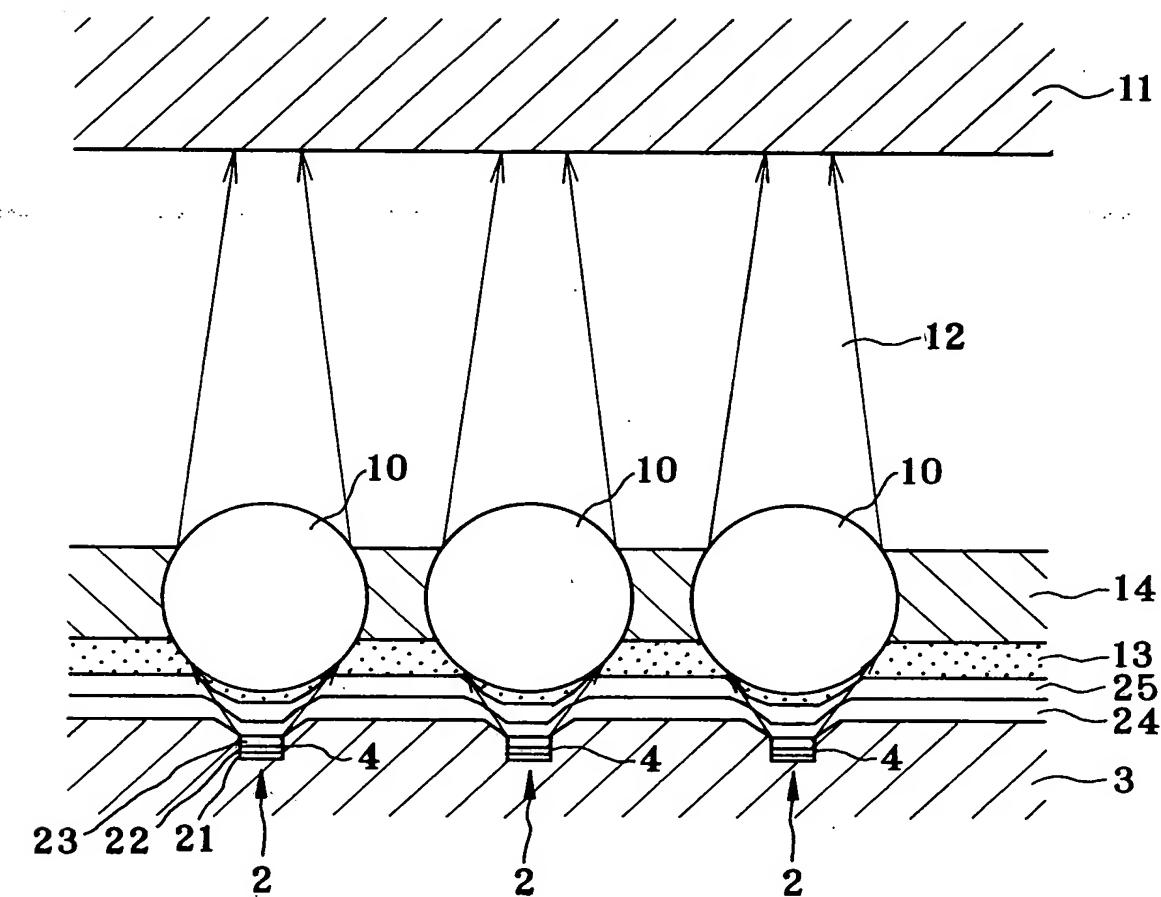


FIG. 15(a)

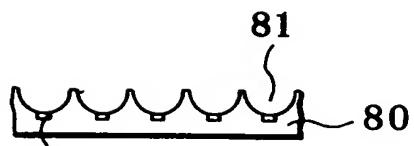


FIG. 15(b)

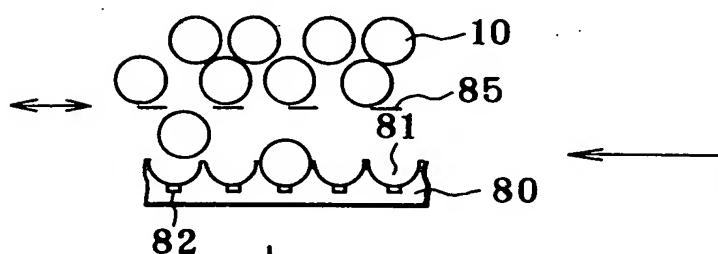


FIG. 15(c)

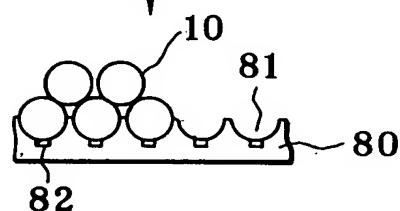


FIG. 15(d)

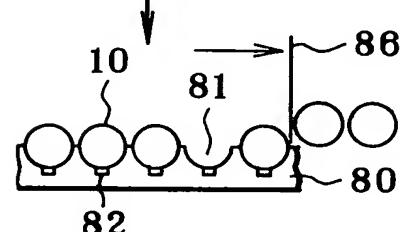
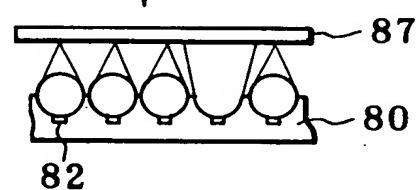


FIG. 15(e)



OK

*

FIG. 16(a)

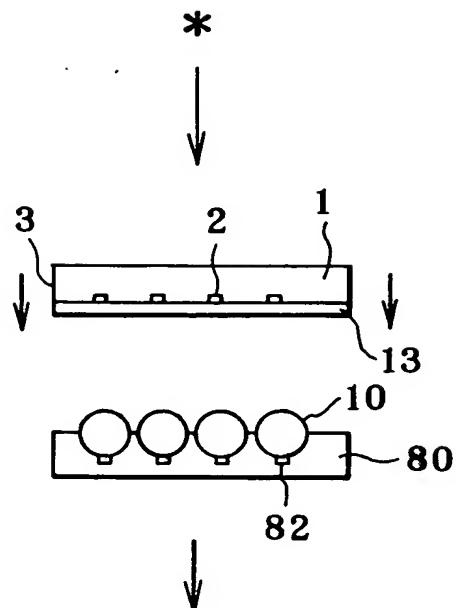


FIG. 16(b)

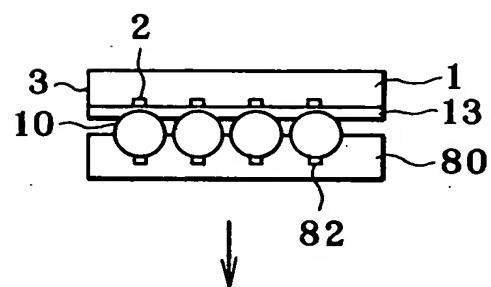


FIG. 16(c)

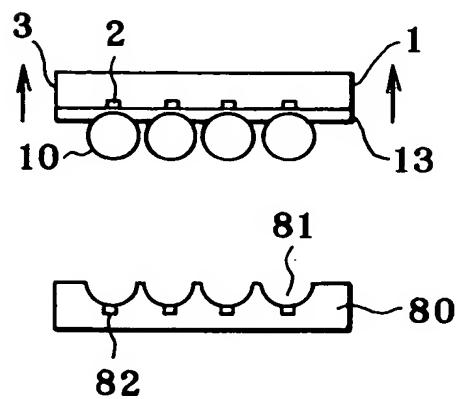


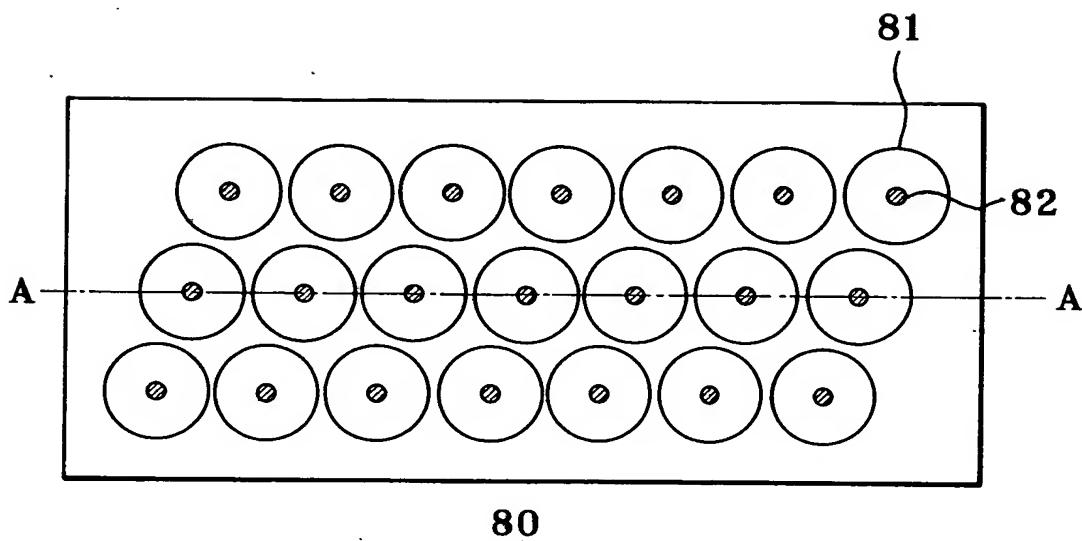
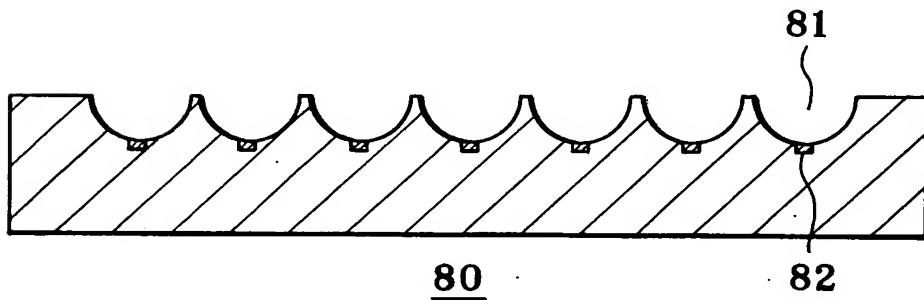
FIG. 17(a)**FIG. 17(b)**

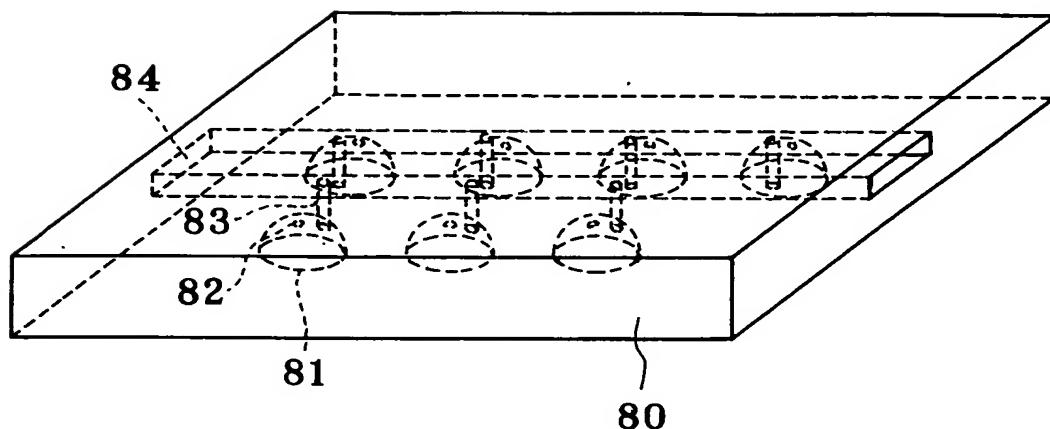
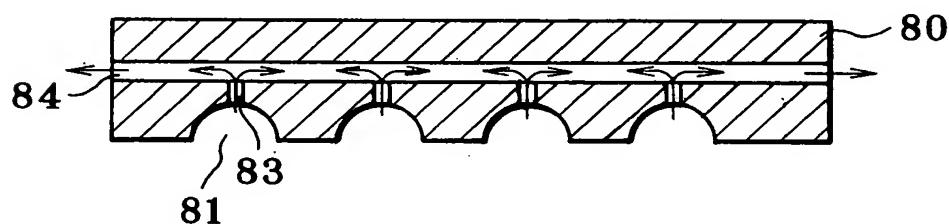
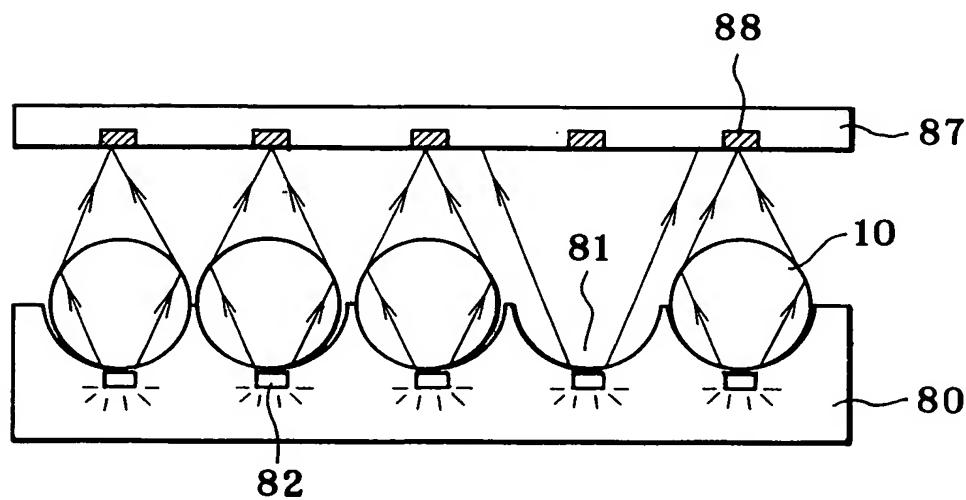
FIG. 18(a)**FIG. 18(b)****FIG. 19**

FIG. 20(a)

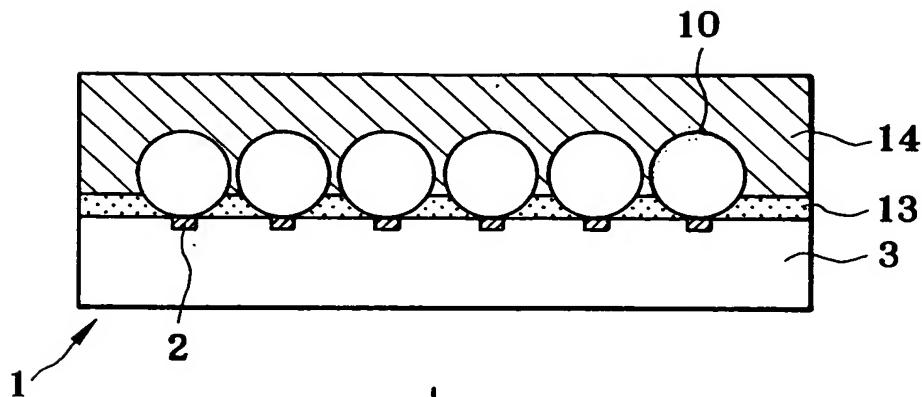


FIG. 20(b)

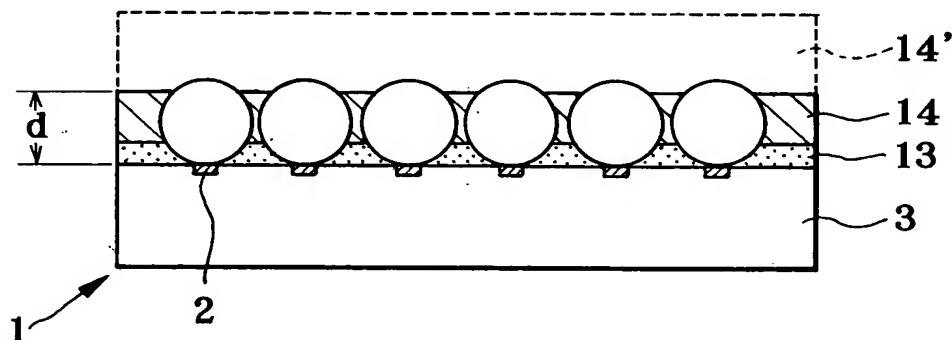


FIG. 21

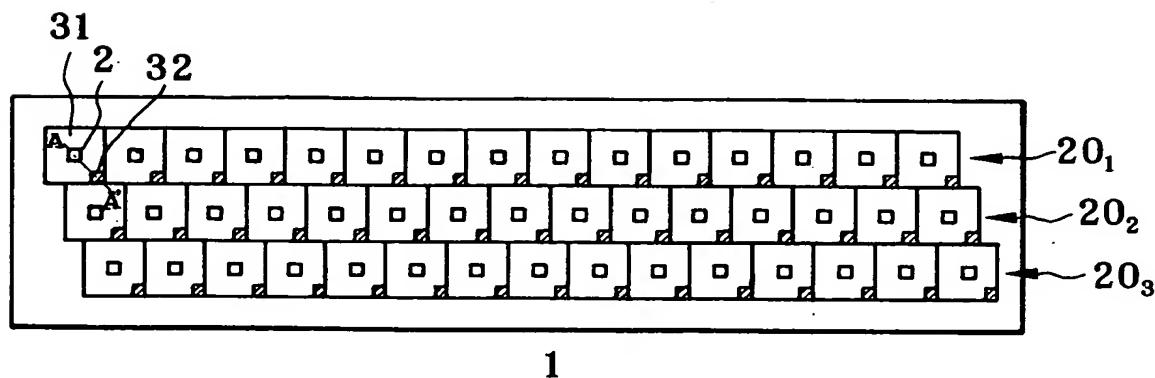


FIG. 22

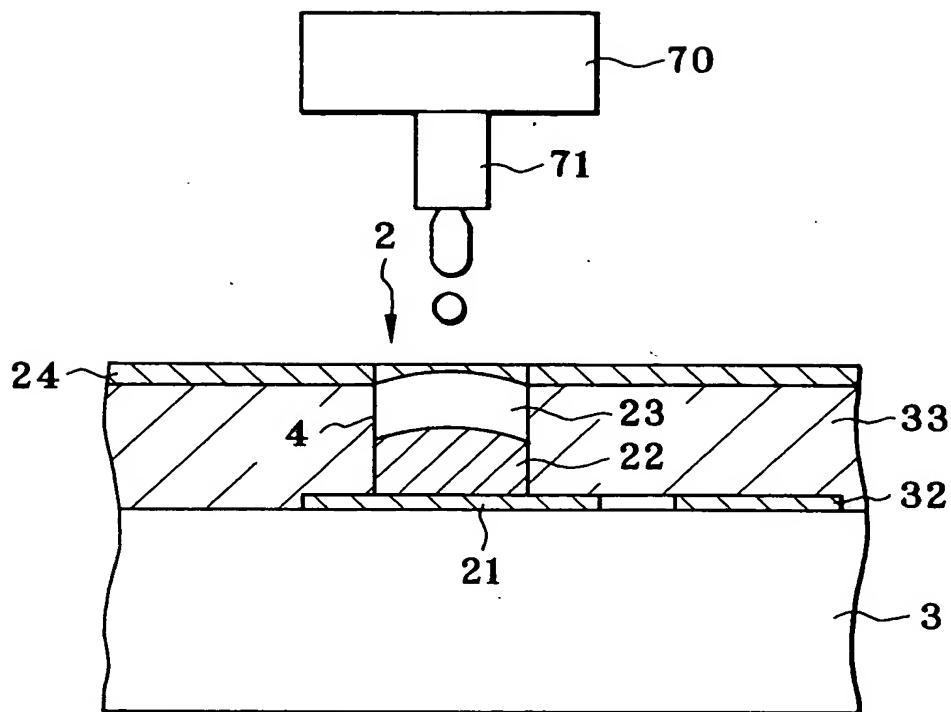


FIG. 23

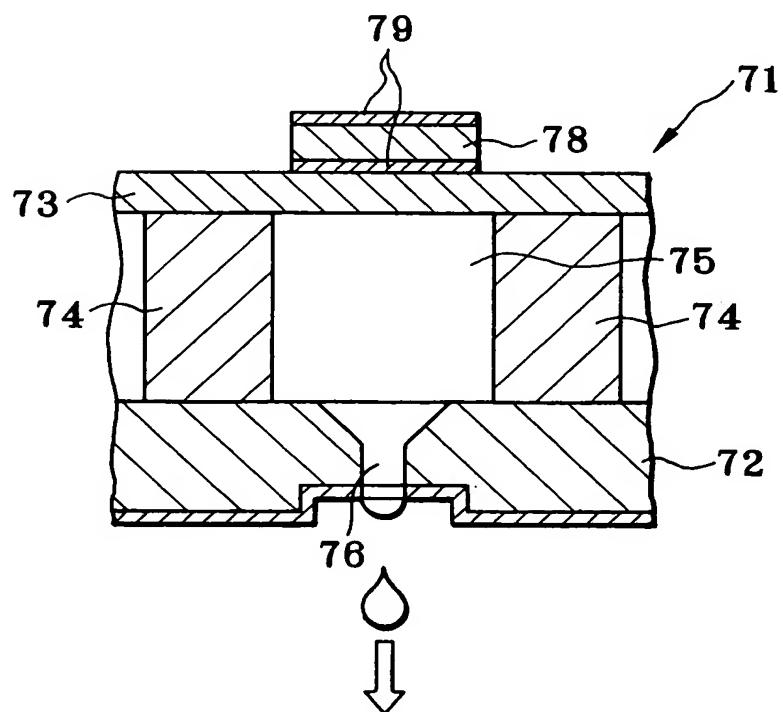


FIG. 24(a)

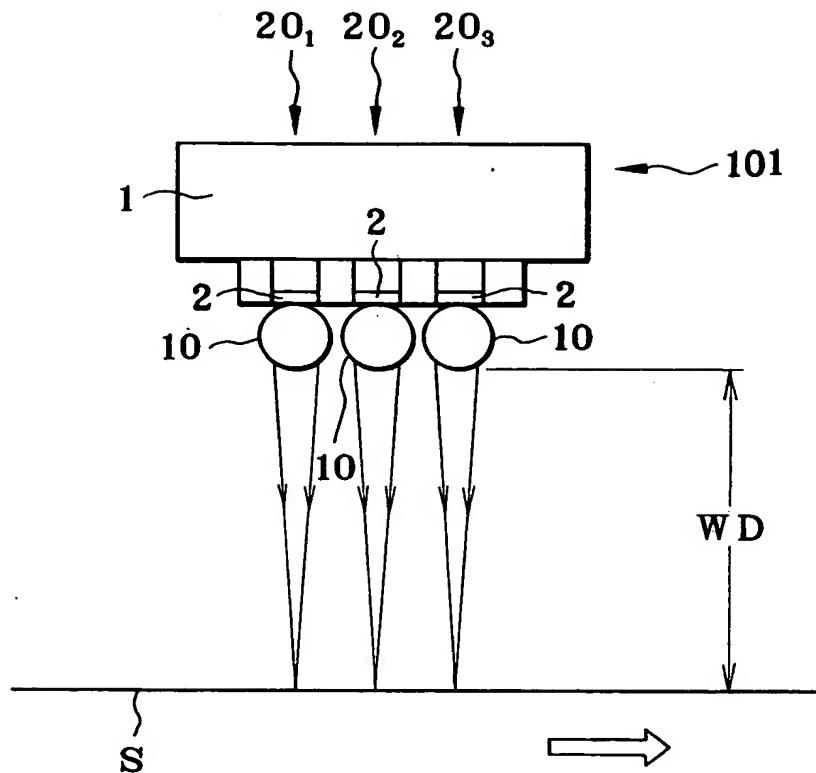


FIG. 24(b)

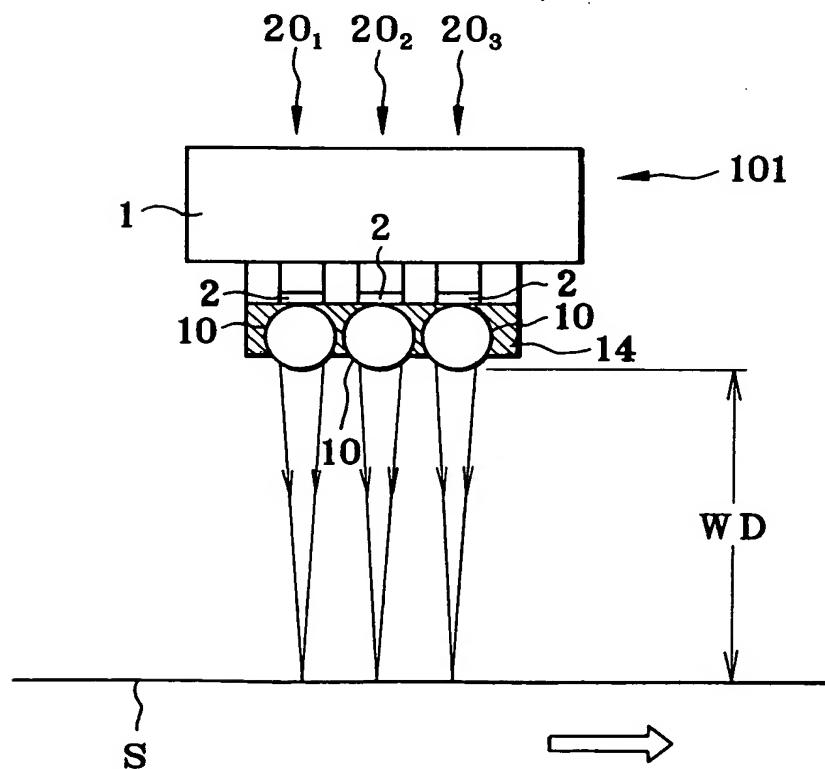


FIG. 25

